



DCS

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NORTH DAKOTA WIND RESOURCE ASSESSMENT STUDY

DATA DISTRIBUTION PACKET (DEVELOPER'S)

JANUARY 2000

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EXECUTIVE SUMMARY

North Dakota has long been identified by the Department of Energy and its research laboratories as having the greatest wind energy resource and potential for wind generation development in the lower 48 states. This distinction, however, was based on very limited wind speed and direction data, most of which was obtained at heights which did not correspond with the hub heights for present-day wind turbines.

In 1993, the North Dakota Division of Community Services (then the Office of Intergovernmental Assistance) facilitated a statewide wind resource assessment program conducted by seven regional utilities and the Electric Power Research Institute (EPRI). The seven participating utilities were: Basin Electric Power Cooperative, Great River Energy (formerly Cooperative Power and United Power Association), Minnkota Power Cooperative, Montana-Dakota Utilities, Northern States Power, and Otter Tail Power Company. The Division of Community Services (DCS) participated in early project discussions and provided funding for a report prepared by Hansen, McQuat, Hamrin & Rohde, Inc. titled "Wind Resource Assessment: Developing an In-State Capability for North Dakota."

The seven utilities embarked on a cooperative effort to conduct wind monitoring at sites throughout North Dakota. The wind monitoring program was specifically designed to select sites with good potential for large-scale wind energy development. The group contracted with the Electric Power Research Institute to manage the program, and the work was performed through a research contract with the University of North Dakota in Grand Forks. EPRI also provided funding for additional monitoring work that was conducted in conjunction with the utility program.

The initial two-year project, with funding of just over \$200,000, involved selecting eight sites throughout the state that indicated a potential for significant wind resources. Factors used to select the sites included: topographical features that would concentrate and enhance the wind resource, proximity to existing transmission facilities, available existing data, and other anecdotal information and observations about windy areas. Hourly wind speed and direction data were gathered at various heights up to 180 feet. The data were then reviewed by a meteorologist from the wind industry.

At the end of the initial two-year study period, six of the utilities decided to fund the project for one more year. The official project was terminated at the end of 1997. The participating utilities agreed in late 1999 to release the study data to the Division of Community Services. The DCS gratefully acknowledges this valuable contribution which may well further the eventual development of North Dakota's wind energy resource.

ACKNOWLEDGMENTS

The North Dakota Division of Community Services hereby acknowledges the following as Cosponsors of the North Dakota Wind Resource Assessment Study.

Basin Electric Power Cooperative - Bismarck, North Dakota

Minnkota Power Cooperative, Inc. - Grand Forks, North Dakota

Northern States Power Co. - Minneapolis, Minnesota

Otter Tail Power Co. - Fergus Falls, Minnesota

Montana Dakota Utilities Co. - Bismarck, North Dakota

Great River Energy - Elk River, Minnesota

(formerly Cooperative Power and United Power Association)

DISCLAIMER

The Data Requestor assumes full responsibility for data interpretation and accuracy.

The information contained in this document and related media is provided as a convenience to the Data Requestor.

The Data Requestor agrees that the use of this information is entirely at the user's risk. The information is provided as is, without warranty of any kind, either expressed or implied, including without limitation any warranty for information provided through or in connection with this document or related media.

SITE SUMMARY TABLES

Site Locations

Site Name	Latitude	Longitude	Township/Range	Section	County
Olga	48°46'48"	98°02'16"	T161N, R57W South Olga	SE ¼ Section 8	Cavalier
Olga #1	48°45'34"	98°01'30"	T161N, R57W South Olga	NE ¼ Section 21	Cavalier
Olga #2	48°38'36"	97°59'15"	T160N, R57W East Alma	NW ¼ Section 34	Cavalier
Olga #3	48°42'58"	98°13'50"	T160N, R59W Easby	NE ¼ Section 3	Cavalier
Olga #4	48°49'05"	98°15'35"	T162N, R59W Harvey	NE ¼ Section 34	Cavalier
Olga #5	48°49'00"	98°04'56"	T162N, R57W North Olga _{ANNEX}	NE ¼ Section 36	Cavalier
Petersburg	47°59'13"	98°00'35"	T152N, R57W Petersburg	NW ¼ Section 18	Nelson
Benedict	47°53'20"	101°06'25"	T151N, R82W Iota Flat	NE ¼ Section 24	Ward
Ray/Wheelock	48°15'57"	103°11'52"	T155N, R97W View	NE ¼ Section 7	Williams
Green River	47°04'05"	102°55'38"	T142N, R97W	SE ¼ Section 35	Dunn
Wilton	47°08'21"	100°42'21"	T142N, R79W Eckland	NW ¼ Section 9	Burleigh
Alfred	46°35'15"	99°00'46"	T136N, R66W Glen	NW ¼ Section 20	LaMoure
Valley City	46°58'35"	97°53'22"	T140N, R57W Alta	NW ¼ Section 4	Barnes
Pickert	47°30'03"	97°48'58"	T147N, R56W	Section 32	Steele

Site Measurement Elevation Summary

Site Name	Tower Type		Measurement Levels (ft)			
	Microsite	Tall Tower	33'	82'	131'	180'
Olga		Utility Tower	S & D & T	S	S & D	S & T
Olga #1	NRG-10 Tower		S & D			
Olga #2	NRG-10 Tower		S & D			
Olga #3	NRG-10 Tower		S & D			
Olga #4	NRG-10 Tower		S & D			
Olga #5	NRG-10 Tower		S & D			
Petersburg		Utility Tower	S & D	S	S & D	S
Benedict		NRG-40 Tower	S & D	S	S & D	
Ray		NRG-40 Tower	S & D	S	S & D	
Green River		Utility Tower	S & D	S	S & D	S(190')
Wilton		Utility Tower	S & D	S(90')	S & D	S
Alfred		Utility Tower	S & D	S	S & D	
Valley City		NRG-40 Tower	S & D	S	S & D	
Pickert		Utility Tower	S & D	S & D	S & D	S & D

S - Wind Speed, D - Wind Direction, T - Ambient Temperature

DATES OF DATA COLLECTION BY SITE & FILE NAME

Site	File Name	Begin Date	End Date
Alfred	AlA_293	10/1/94	12/31/94
	AlB_293	12/31/94	3/31/95
	AlC_293	7/5/95	2/28/96
	AlD_293	2/28/96	7/3/96
	AlE_293	7/3/96	10/2/96
	AlF_293	10/2/96	1/1/97
	AlG_293	1/1/97	4/2/97
	AlH_293	4/2/97	7/2/97
	AlI_293	7/2/97	10/1/97
	AlJ_293	10/1/97	12/25/97

Benedict	BnA_281	10/22/94	4/1/95
	BnB_281	6/30/95	10/2/95
	BnC_281	10/2/95	1/2/96
	BnD_281	1/3/96	4/2/96
	BnE_281	4/2/96	7/2/96
	BnF_281	7/2/96	10/1/96
	BnG_281	10/1/96	1/1/97
	BnH_281	1/1/97	4/1/97
	BnI_281	4/1/97	7/2/97
	BnJ_281	7/2/97	7/11/97
	BnK_281	9/30/97	12/22/97

Site	File Name	Begin Date	End Date
Green River	GrA_290	10/1/94	12/31/94
	GrB_290	12/31/94	3/31/95
	GrC_290	7/5/95	9/27/95
	GrD_290	9/27/95	1/3/96
	GrE_290	1/3/96	4/3/96
	GrF_290	4/3/96	7/3/96
	GrG_290	7/3/96	10/2/96
	GrH_290	10/2/96	1/1/97
	GrI_290	1/1/97	4/2/97
	GrJ_290	4/2/97	7/2/97
	GrK_290	7/2/97	10/1/97
	GrL_290	10/1/97	12/31/97

Olga	OIA_257	10/1/94	12/31/94
	OIB_257	12/31/94	3/31/95
	OIC_257	7/5/95	9/27/95
	OID_257	10/4/95	1/3/96
	OIE_257	1/3/96	4/3/96
	OIF_257	4/3/96	7/3/96
	OIG_257	7/3/96	10/2/96
	OIH_257	10/2/96	1/1/97
	OII_257	1/1/97	4/2/97
	OIJ_257	4/2/97	7/2/97
	OIK_257	7/2/97	10/1/97
	OIL_257	10/1/97	12/10/97

Olga 1	1OIA_351	10/1/94	12/31/94
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Site	File Name	Begin Date	End Date
	1OlB_351	12/31/94	3/31/95
	1OlC_351	7/5/95	9/27/95
	1OlD_351	10/4/95	1/3/96
	1OlE_351	1/3/96	4/3/96
	1OlF_351	4/3/96	5/8/96

Olga 2	2OlA_271	10/1/94	12/31/94
	2OlB_271	12/31/94	3/31/95
	2OlC_271	7/5/95	9/27/95
	2OlD_271	10/4/95	1/3/96
	2OlE_271	1/3/96	4/3/96
	2OlF_271	4/3/96	7/3/96
	2OlG_271	7/3/96	10/2/96
	2OlH_271	10/2/96	10/30/96

Olga 3	3OlA_279	10/1/94	12/31/94
	3OlB_279	12/31/94	3/31/95
	3OlC_279	7/5/95	9/27/95
	3OlD_279	10/4/95	1/3/96
	3OlE_279	1/3/96	4/3/96
	3OlF_279	4/3/96	7/3/96
	3OlG_279	7/3/96	10/2/96
	3OlH_279	10/2/96	10/30/96

Olga 4	4OlA_352	10/1/94	12/31/94
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Site	File Name	Begin Date	End Date
	4OlB_352	1/1/95	3/31/95
	4OlC_352	7/5/95	9/27/95
	4OlD_352	10/4/95	1/3/96
	4OlE_352	1/3/96	4/3/96
	4OlF_352	4/3/96	7/3/96
	4OlG_352	7/3/96	10/2/96
	4OlH_352	10/2/96	10/16/96

Olga 5	5OlA_354	10/1/94	12/31/94
	5OlB_354	12/31/94	3/31/95
	5OlC_354	7/2/95	3/21/96

Petersburg	PbA_291	10/1/94	12/31/94
	PbB_291	12/31/94	3/31/95
	PbC_291	7/5/95	9/27/95
	PbD_291	9/27/95	1/3/96
	PbE_291	1/3/96	4/3/96
	PbF_291	4/3/96	7/3/96
	PbG_291	7/3/96	10/2/96
	PbH_291	10/2/96	1/1/97
	PbI_291	1/1/97	4/2/97
	PbJ_291	4/2/97	7/2/97
	PbK_291	7/2/97	10/1/97
	PbL_291	10/1/97	12/31/97

Pickert	PkA_006	3/21/97	4/2/97
	PkB_006	4/2/97	7/2/97

Site	File Name	Begin Date	End Date
	PkC_006	7/2/97	10/1/97
	PkD_006	10/1/97	12/31/97

Ray	RwA_288	10/1/94	12/31/94
	RwB_288	12/31/94	3/31/95
	RwC_288	7/5/95	9/27/95
	RwD_288	9/27/95	1/3/96
	RwE_288	1/3/96	4/3/96
	RwF_288	4/3/96	7/3/96
	RwG_288	7/3/96	10/2/96
	RwH_288	10/2/96	1/1/97
	RwI_288	1/1/97	4/2/97
	RwJ_288	4/2/97	7/2/97
	RwK_288	7/2/97	10/1/97
	RwL_288	10/1/97	12/31/97

Valley City	VcA_299	10/1/94	12/31/94
	VcB_299	12/31/94	3/31/95
	VcC_299	7/5/95	7/26/95
	VcD_299	10/2/95	1/3/96
	VcE_299	1/3/96	4/3/96
	VcF_299	4/3/96	6/19/96
	VcG_299	4/2/97	7/2/97
	VcH_299	7/2/97	8/27/97

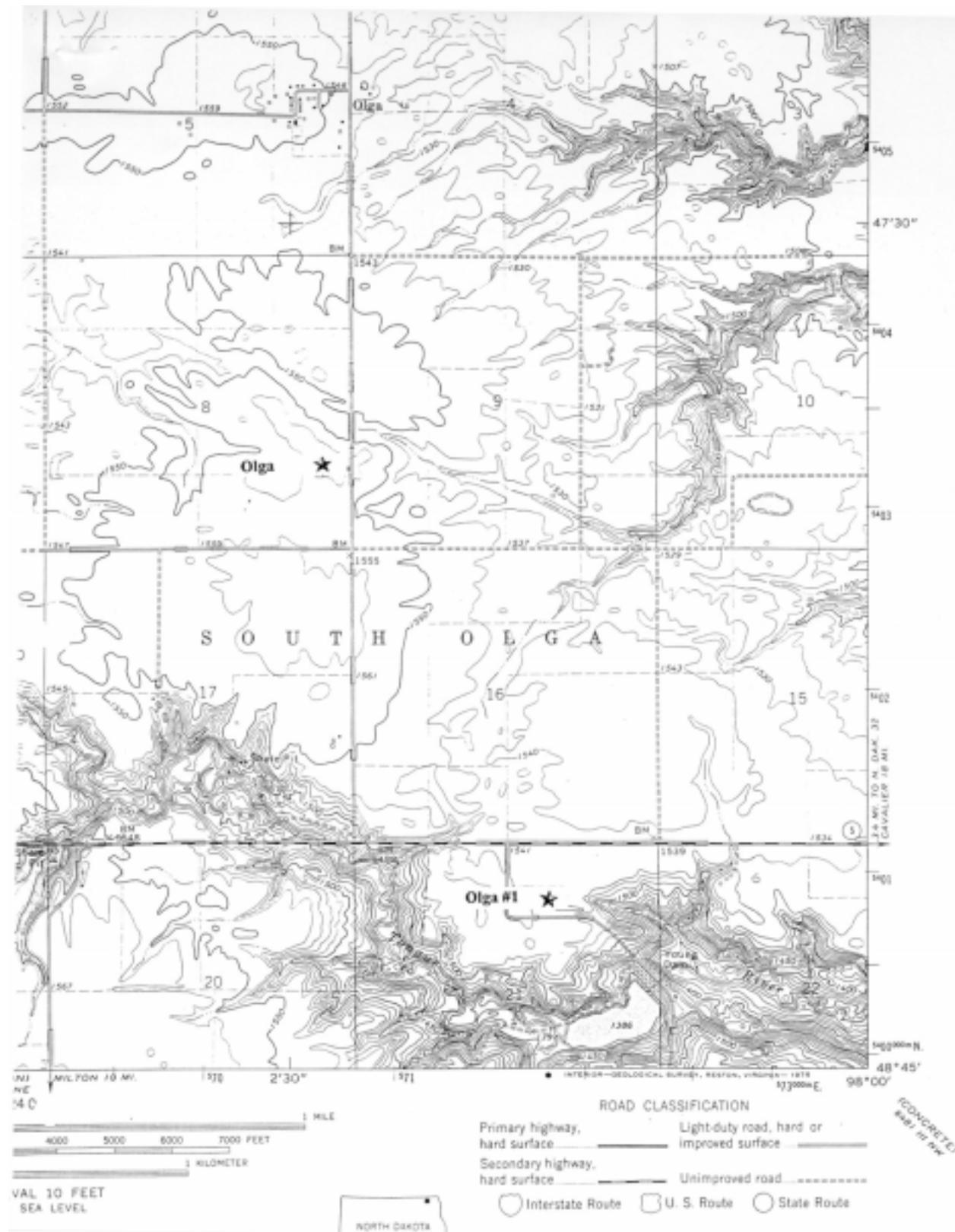
Wilton	WiA_292	10/1/94	12/31/97
	WiB_292	12/31/94	3/31/95

Site	File Name	Begin Date	End Date
	WiC_292	7/5/95	9/27/95
	WiD_292	9/27/95	1/3/96
	WiE_292	1/3/96	4/3/96
	WiF_292	4/3/96	7/3/96
	WiG_292	7/3/96	10/2/96
	WiH_292	10/2/96	1/1/97
	WiI_292	1/1/97	4/2/97
	WiJ_292	4/2/97	7/2/97
	WiK_292	7/2/97	10/1/97
	WiL_292	10/1/97	12/31/97

SITES - SPECIFIC INFORMATION & MAPS

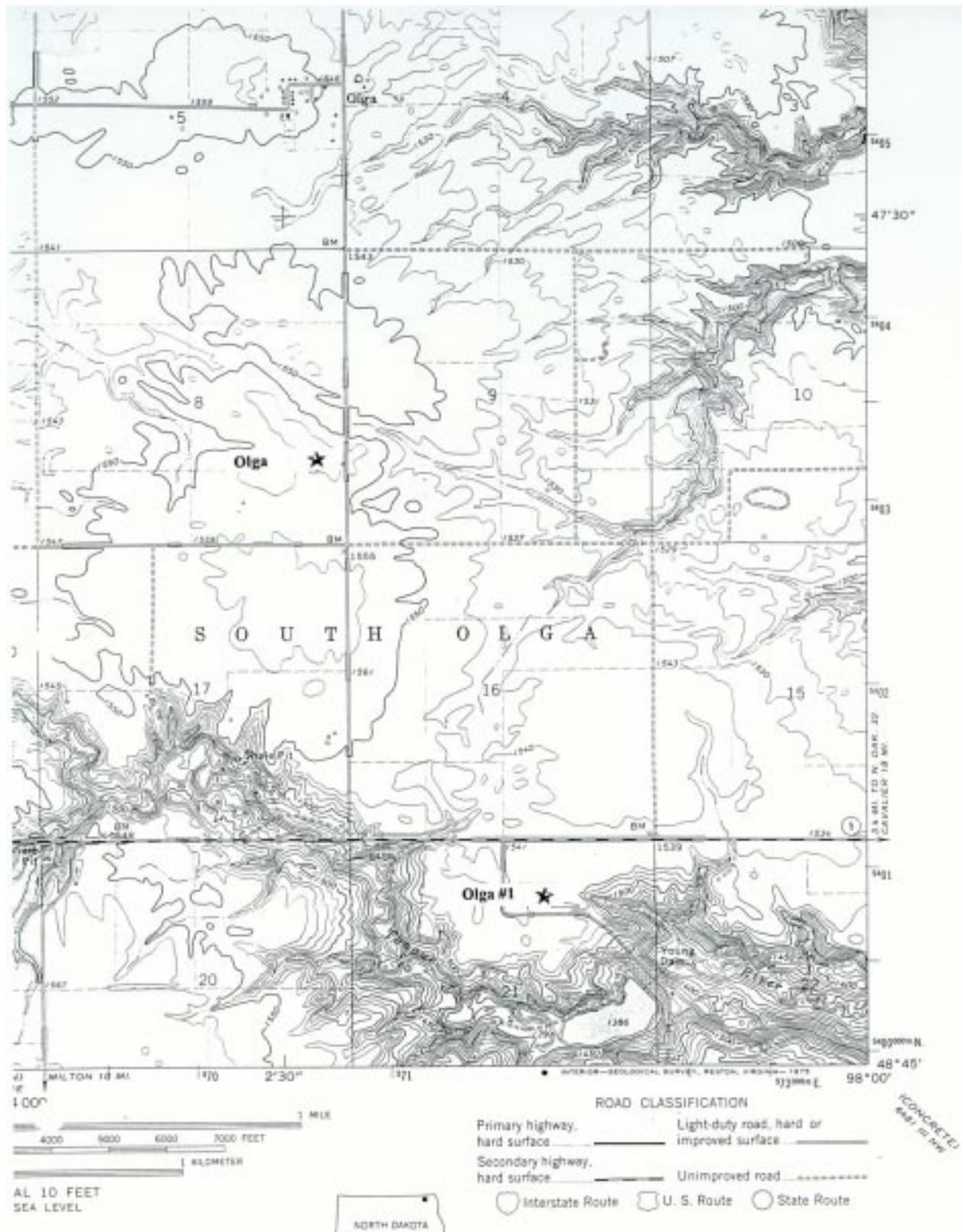
SITE INSTALLATION FORM

Site Name	Olga	
Tower Type	Tall Tower	
Geographic Location		
Latitude	48-46-48 D-M-S	
Longitude	98-02-16 D-M-S	
USGS Map Quad	Olga	
Section	Section 8 E½, SE¼	
Township	161 N	
Range	57 W	
Base Elevation	1560 ft	
Tower Height	300 ft	
Measurement Levels		
Level - Lowest	1	33 ft
Level	2	82 ft
Level	3	131 ft
Level	4	180 ft
Tower Type	Three-sided, solid-rod	
Equipment Serial Numbers	Levels	
Datalogger		0100257
Anemometer	1	1536
Anemometer	2	1537
Anemometer	3	1538
Anemometer	4	1539
Wind Direction	1	1
Wind Direction	2	
Wind Direction	3	2
Temperature Sensor	1	
Temperature Sensor	4	
Tower		



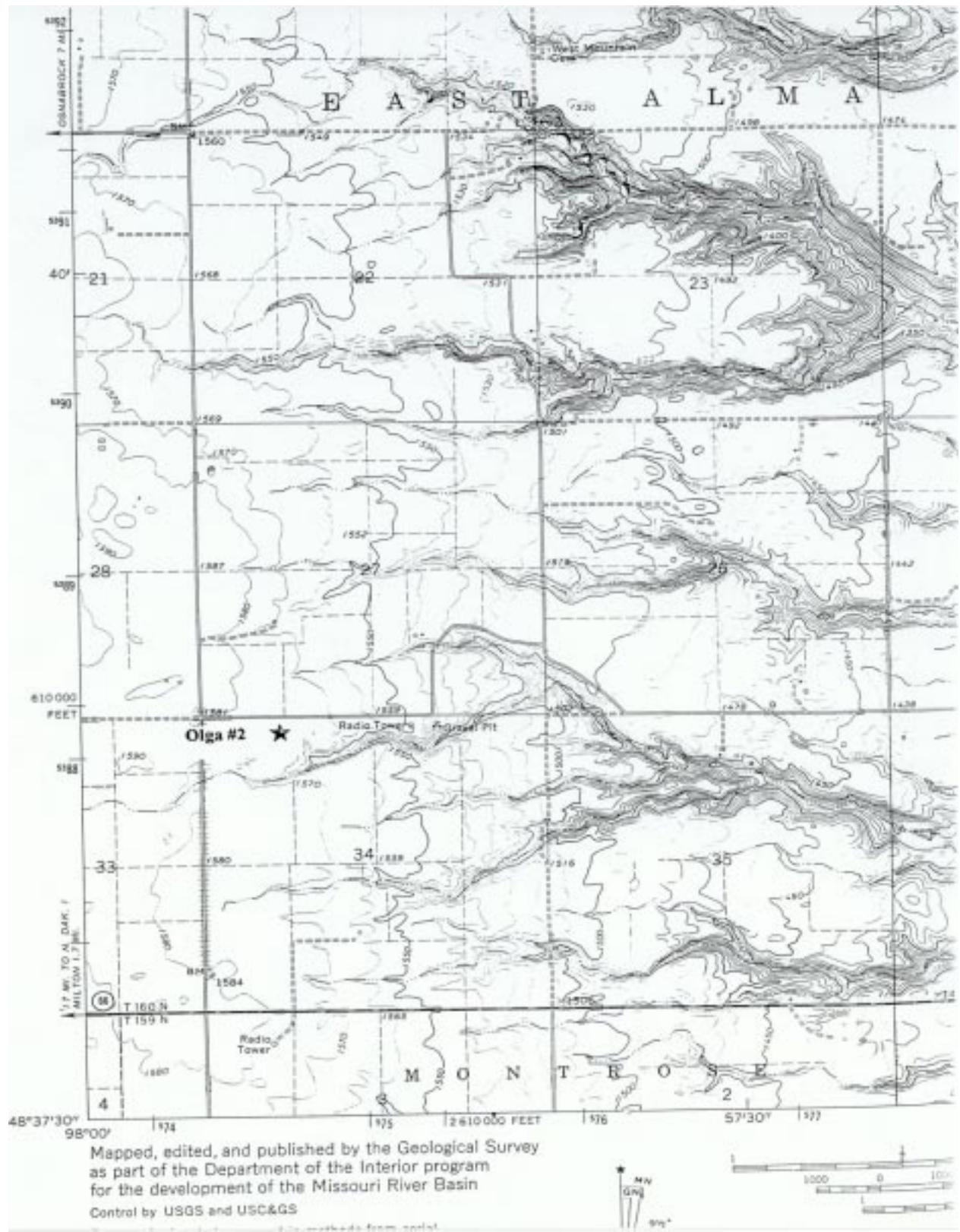
SITE INSTALLATION FORM

Site Name	Olga #1	
Tower Type	Micro Site Tower	
Geographic Location		
Latitude	48-45-34 D-M-S	
Longitude	98-01-30 D-M-S	
USGS Map Quad	Olga	
Section	Section 21 NE $\frac{1}{4}$, NE $\frac{1}{4}$	
Township	161 N	
Range	57 W	
Base Elevation	1540 ft	
Tower Height	33 ft	
Measurement Levels		
Level - Lowest	1	33 ft
Level	2	
Level	3	
Level	4	
Tower Type	NRG: TT-30	
Equipment Serial Numbers	Levels	
Datalogger		0100246
Anemometer	1	1542
Anemometer	2	
Anemometer	3	
Anemometer	4	
Wind Direction	1	3
Wind Direction	2	
Wind Direction	3	
Temperature Sensor	1	
Temperature Sensor	2	
Tower		



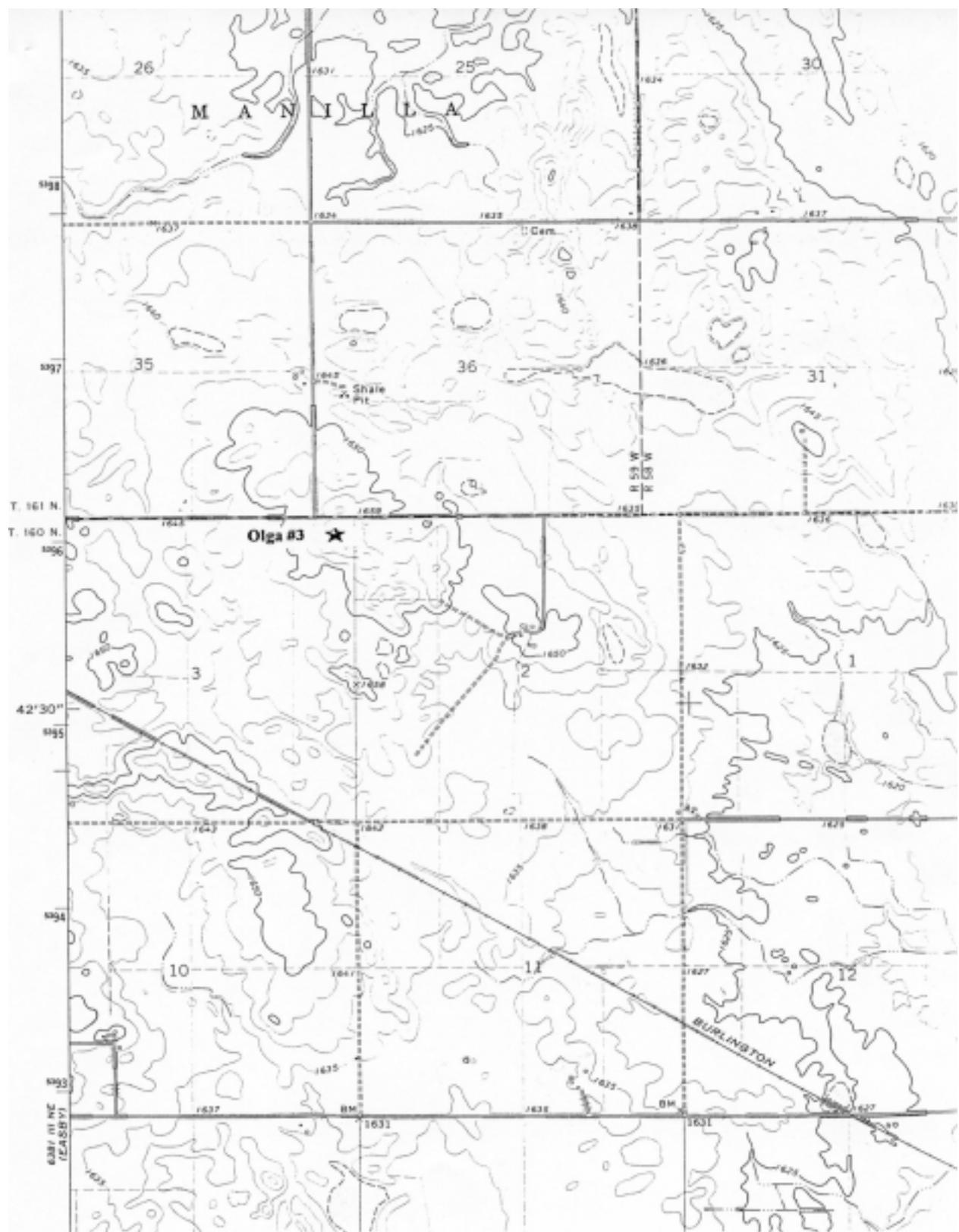
SITE INSTALLATION FORM

Site Name	Olga #2	
Tower Type	Micro Site Tower	
Geographic Location		
Latitude	48-38-36 D-M-S	
Longitude	97-59-15 D-M-S	
USGS Map Quad	Concrete	
Section	Section 34 NW $\frac{1}{4}$, NW $\frac{1}{4}$	
Township	160 N	
Range	57 W	
Base Elevation	1570 ft	
Tower Height	33 ft	
Measurement Levels		
Level - Lowest	1	33 ft
Level	2	
Level	3	
Level	4	
Tower Type	NRG: TT-30	
Equipment Serial Numbers	Levels	
Datalogger		0100271
Anemometer	1	1543
Anemometer	2	
Anemometer	3	
Anemometer	4	
Wind Direction	1	4
Wind Direction	2	
Wind Direction	3	
Temperature Sensor	1	
Temperature Sensor	2	
Tower		



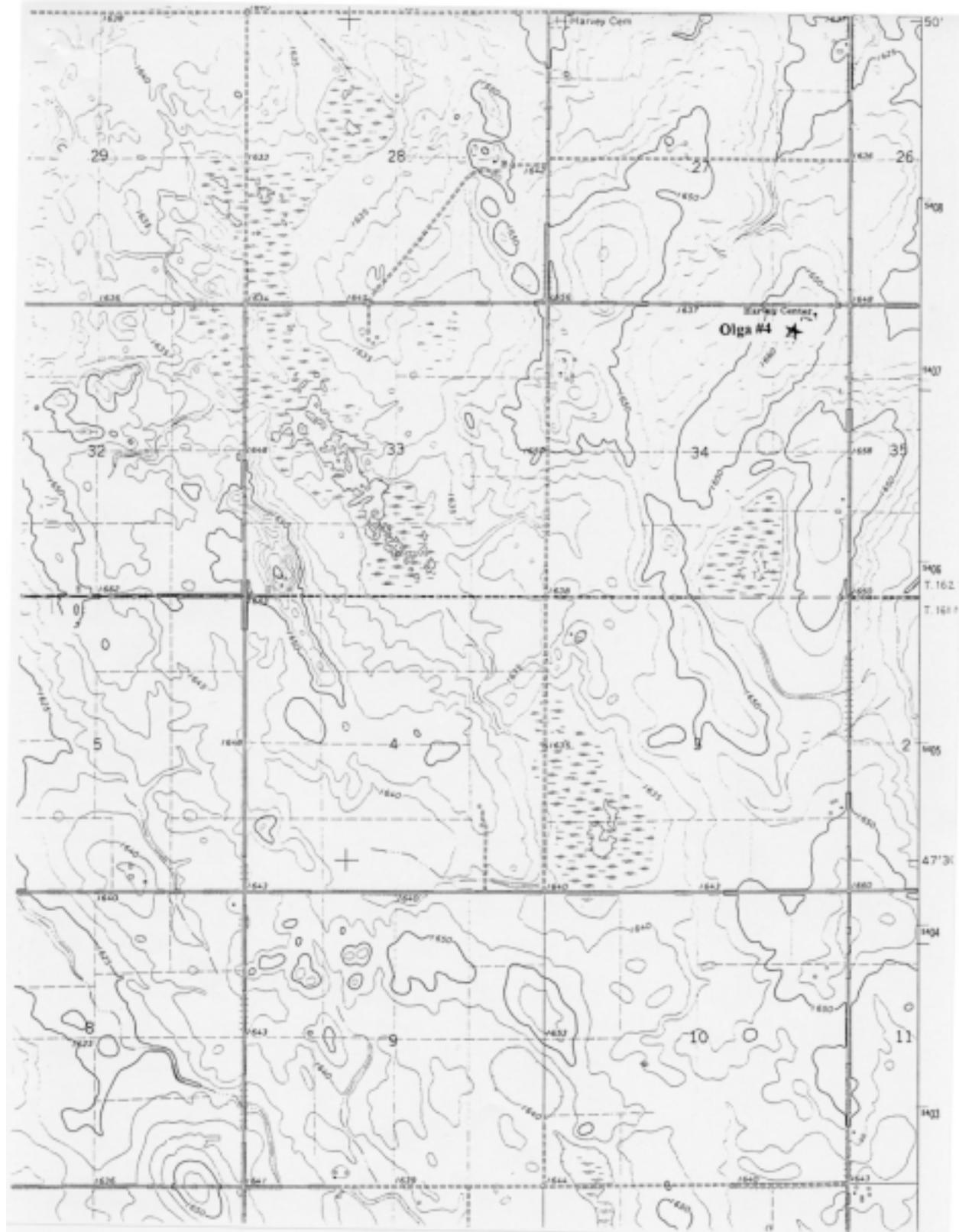
SITE INSTALLATION FORM

Site Name	Olga #3	
Tower Type	Micro Site Tower	
Geographic Location		
Latitude	48-42-58 D-M-S	
Longitude	98-13-50 D-M-S	
USGS Map Quad	Osnabrock	
Section	Section 3 NE $\frac{1}{4}$, NE $\frac{1}{4}$	
Township	160 N	
Range	59 W	
Base Elevation	1670 ft	
Tower Height	33 ft	
Measurement Levels		
Level - Lowest	1	33 ft
Level	2	
Level	3	
Level	4	
Tower Type	NRG: TT-30	
Equipment Serial Numbers	Levels	
Datalogger		0100279
Anemometer	1	1544
Anemometer	2	
Anemometer	3	
Anemometer	4	
Wind Direction	1	5
Wind Direction	2	
Wind Direction	3	
Temperature Sensor	1	
Temperature Sensor	2	
Tower		



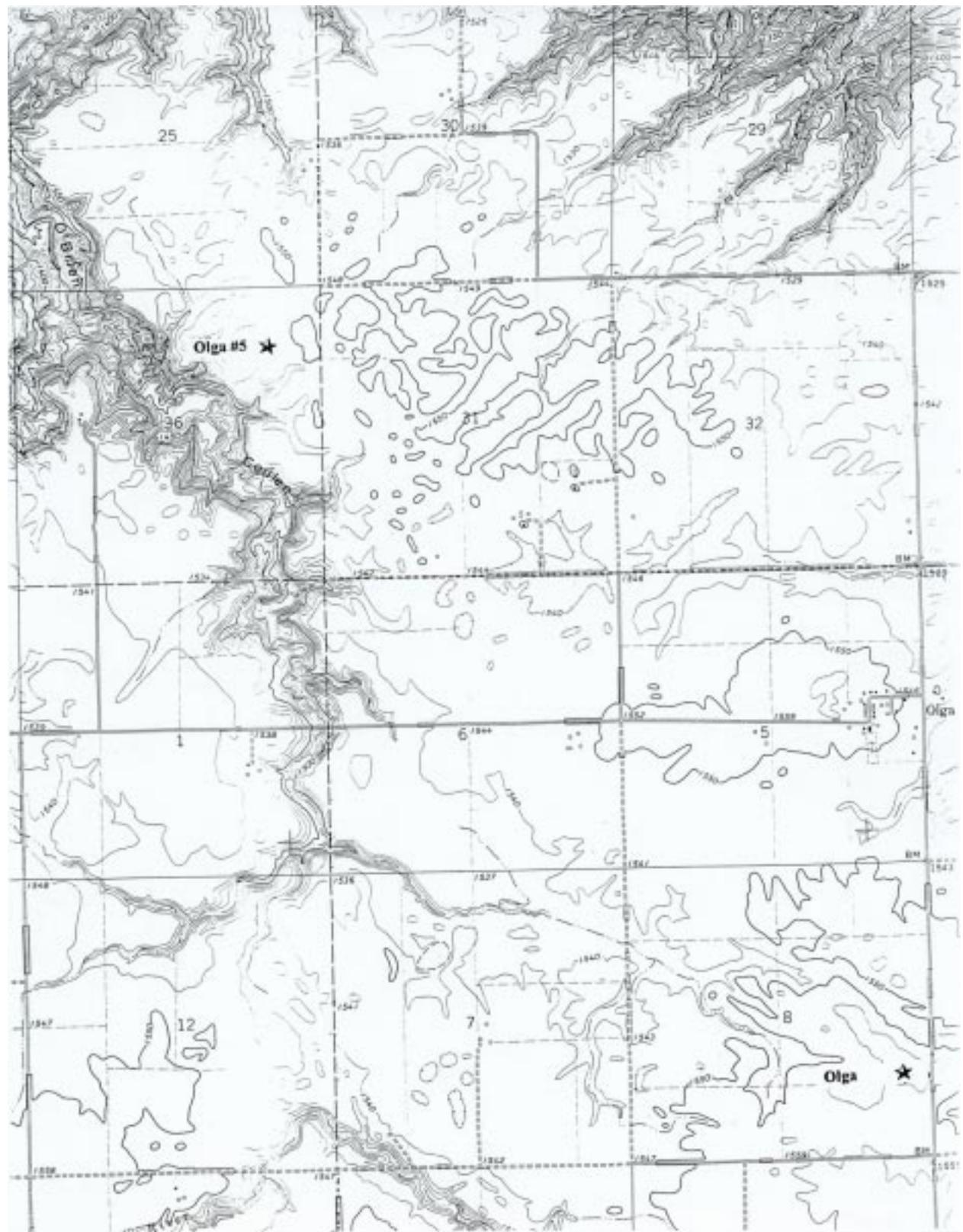
SITE INSTALLATION FORM

Site Name	Olga #4	
Tower Type	Micro Site Tower	
Geographic Location		
Latitude	48-49-05 D-M-S	
Longitude	98-15-35 D-M-S	
USGS Map Quad	Langdon East	
Section	Section 34 NE $\frac{1}{4}$	
Township	162 N	
Range	59 W	
Base Elevation	1670 ft	
Tower Height	33 ft	
Measurement Levels		
Level - Lowest	1	33 ft
Level	2	
Level	3	
Level	4	
Tower Type	NRG: TT-30	
Equipment Serial Numbers	Levels	
Datalogger		0100244
Anemometer	1	1546
Anemometer	2	
Anemometer	3	
Anemometer	4	
Wind Direction	1	6
Wind Direction	2	
Wind Direction	3	
Temperature Sensor	1	
Temperature Sensor	2	
Tower		



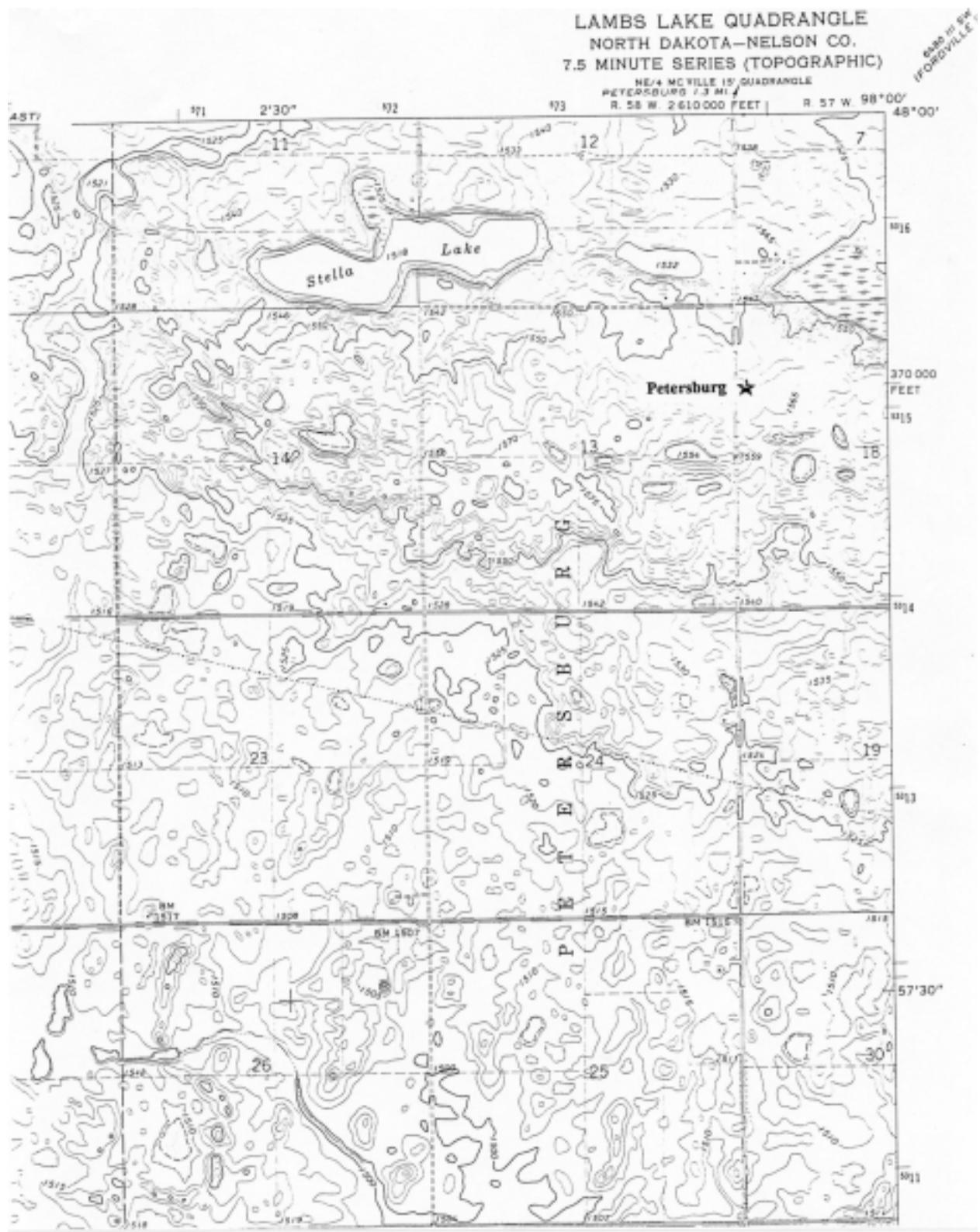
SITE INSTALLATION FORM

Site Name	Olga #5	
Tower Type	Micro Site Tower	
Geographic Location		
Latitude	48-49-00 D-M-S	
Longitude	98-04-56 D-M-S	
USGS Map Quad	Olga	
Section	Section 36 NE $\frac{1}{4}$, NE $\frac{1}{4}$	
Township	162 N	
Range	58 W	
Base Elevation	1550 ft	
Tower Height	33 ft	
Measurement Levels		
Level - Lowest	1	33 ft
Level	2	
Level	3	
Level	4	
Tower Type	NRG: TT-30	
Equipment Serial Numbers	Levels	
Datalogger		0100245
Anemometer	1	1548
Anemometer	2	
Anemometer	3	
Anemometer	4	
Wind Direction	1	7
Wind Direction	2	
Wind Direction	3	
Temperature Sensor	1	
Temperature Sensor	2	
Tower		



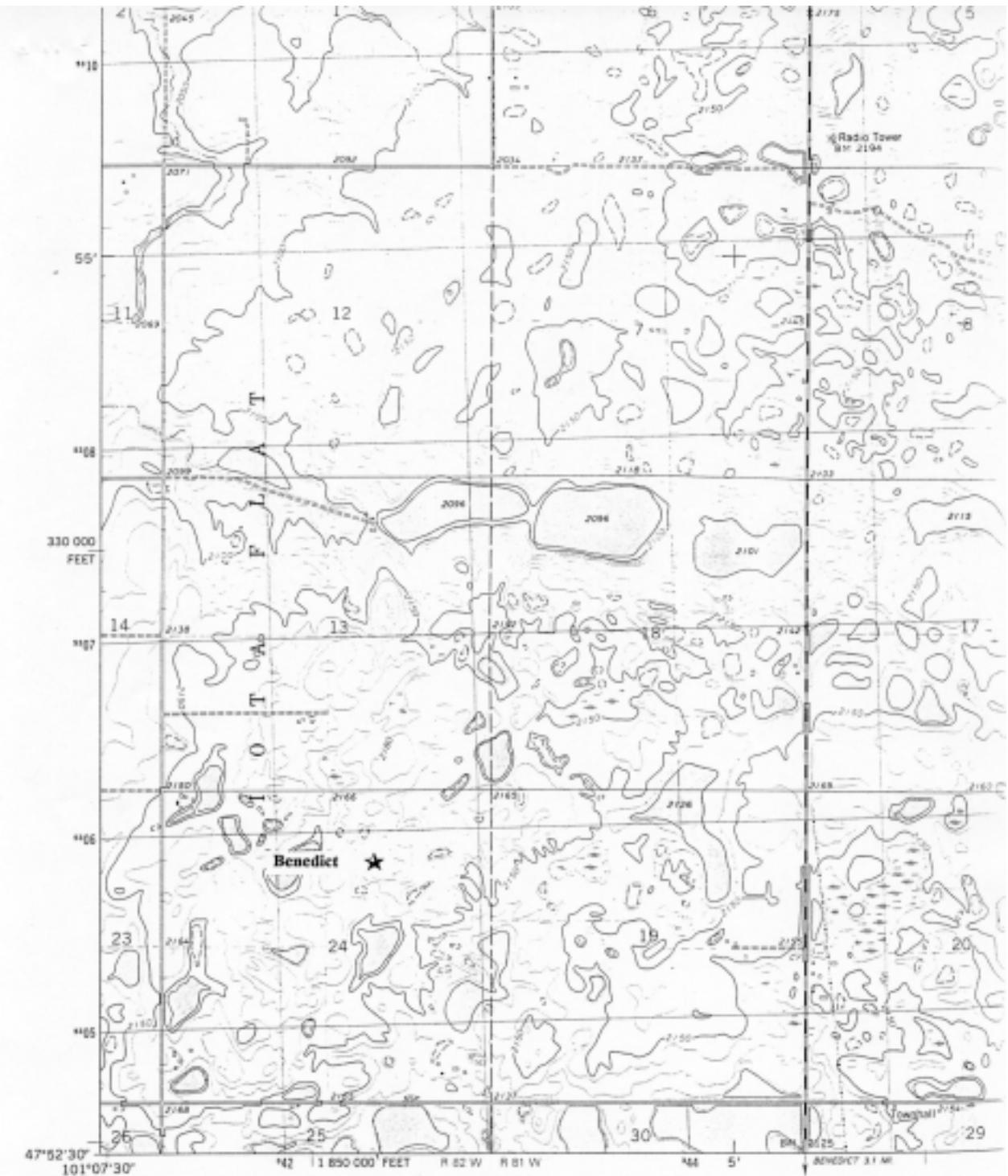
SITE INSTALLATION FORM

Site Name	Petersburg	
Tower Type	Tall Tower	
Geographic Location		
Latitude	47-59-13 D-M-S	
Longitude	98-00-35 D-M-S	
USGS Map Quad	Lambs Lake	
Section	Section 18 W½, NW¼	
Township	152 N	
Range	57 W	
Base Elevation	1565 ft	
Tower Height	245 ft	
Measurement Levels		
Level - Lowest	1	33 ft
Level	2	82 ft
Level	3	131 ft
Level	4	180 ft
Tower Type	Three sided, "Rohn-Type"	
Equipment Serial Numbers	Levels	
Datalogger		0100291
Anemometer	1	1549
Anemometer	2	1550
Anemometer	3	1551
Anemometer	4	1552
Wind Direction	1	8
Wind Direction	2	
Wind Direction	3	9
Temperature Sensor	1	
Temperature Sensor	2	
Tower		



SITE INSTALLATION FORM

Site Name	Benedict	
Tower Type	Tall Tower	
Geographic Location		
Latitude	47-53-20 D-M-S	
Longitude	101-06-25 D-M-S	
USGS Map Quad	Robinson Coulee	
Section	Section 24 NE $\frac{1}{4}$	
Township	151 N	
Range	82 W	
Base Elevation	2200 ft	
Tower Height	131 ft	
Measurement Levels		
Level - Lowest	1	33 ft
Level	2	82 ft
Level	3	131 ft
Level	4	
Tower Type	NRG: 140TTC-HD6	
Equipment Serial Numbers	Levels	
Datalogger		0100281
Anemometer	1	1553
Anemometer	2	1554
Anemometer	3	1555
Anemometer	4	
Wind Direction	1	10
Wind Direction	2	
Wind Direction	3	11
Temperature Sensor	1	
Temperature Sensor	2	
Tower		



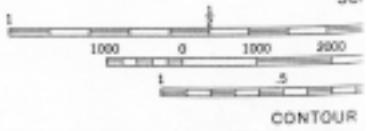
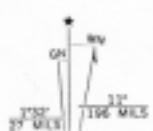
REPRODUCED BY
GEOLOGICAL SURVEY

Mapped, edited, and published by the Geological Survey
in cooperation with the North Dakota Water Commission

Control by USGS and NOS/NOAA

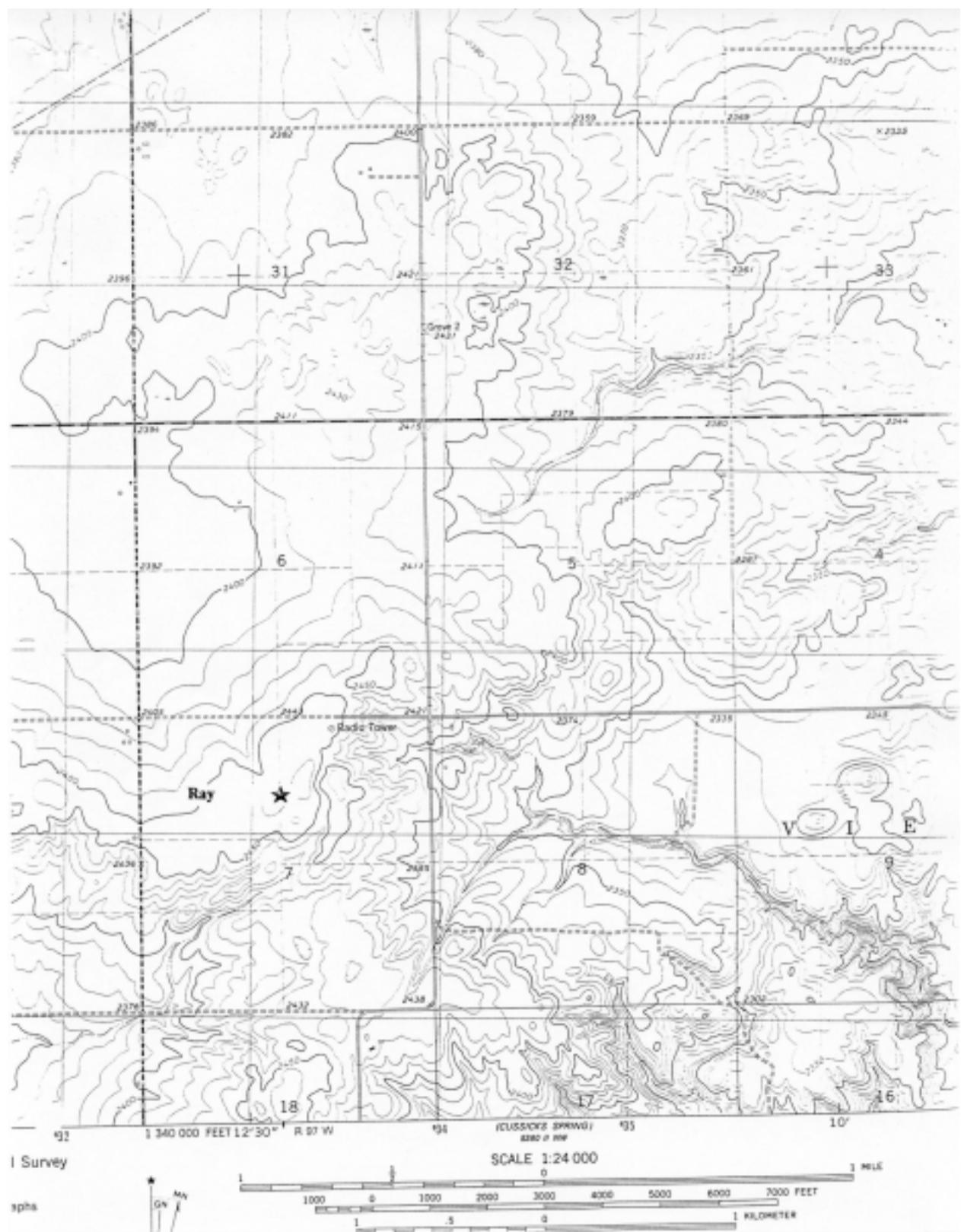
Topography by photogrammetric methods from aerial photographs
taken 1979. Field checked 1979. Map edited 1981

Projection and 10,000-foot grid ticks: North Dakota coordinate



SITE INSTALLATION FORM

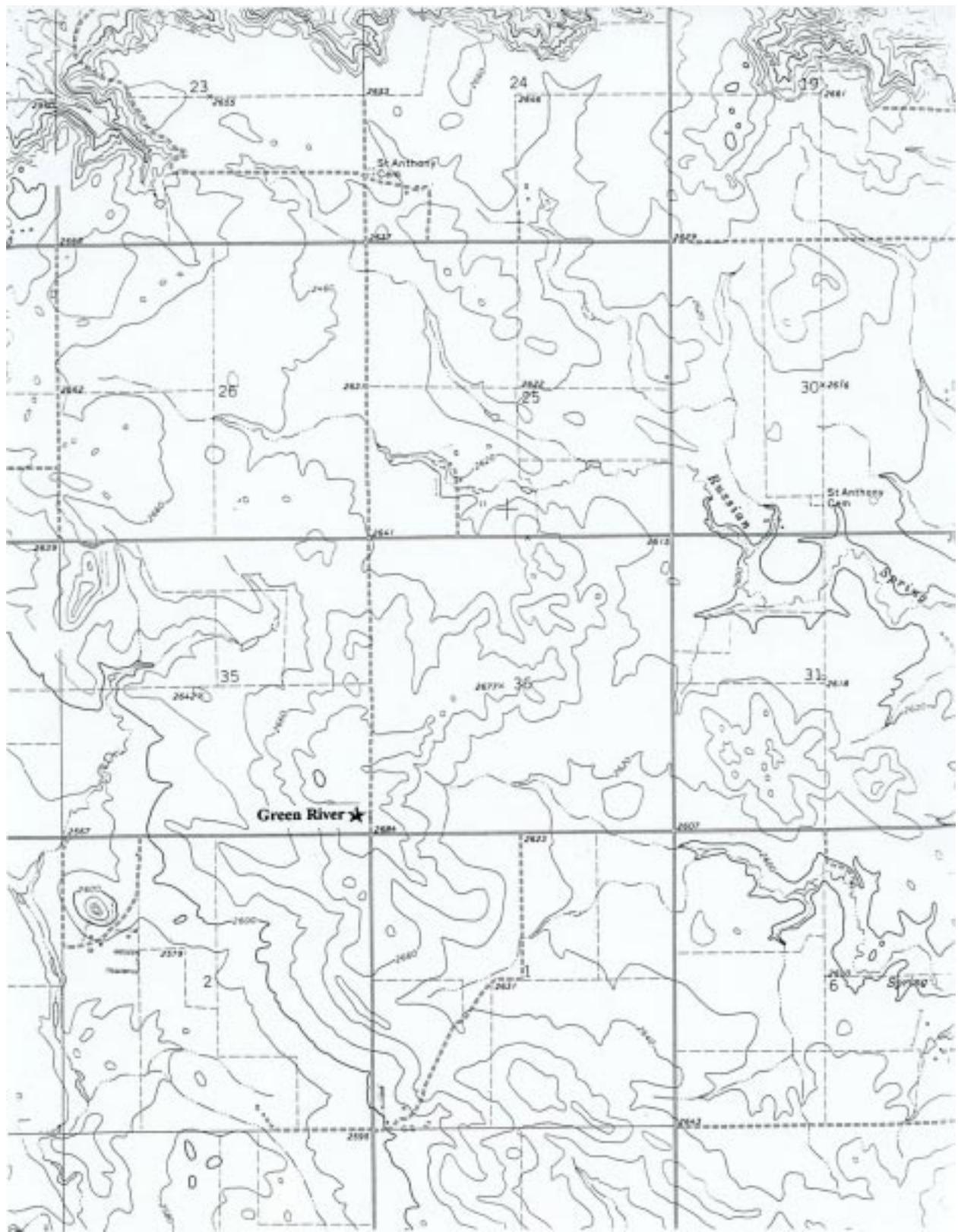
Site Name	Ray/Wheelock	
Tower Type	Tall Tower	
Geographic Location		
Latitude	48-15-57 D-M-S	
Longitude	103-11-52 D-M-S	
USGS Map Quad	Ray	
Section	Section 7 E½, NE¼	
Township	155 N	
Range	97 W	
Base Elevation	2460 ft	
Tower Height	131 ft	
Measurement Levels		
Level - Lowest	1	33 ft
Level	2	82 ft
Level	3	131 ft
Level	4	
Tower Type	NRG: 140TTC-HD6	
Equipment Serial Numbers	Levels	
Datalogger		0100288
Anemometer	1	1557
Anemometer	2	1558
Anemometer	3	1559
Anemometer	4	
Wind Direction	1	12
Wind Direction	2	
Wind Direction	3	13
Temperature Sensor	1	
Temperature Sensor	2	
Tower		



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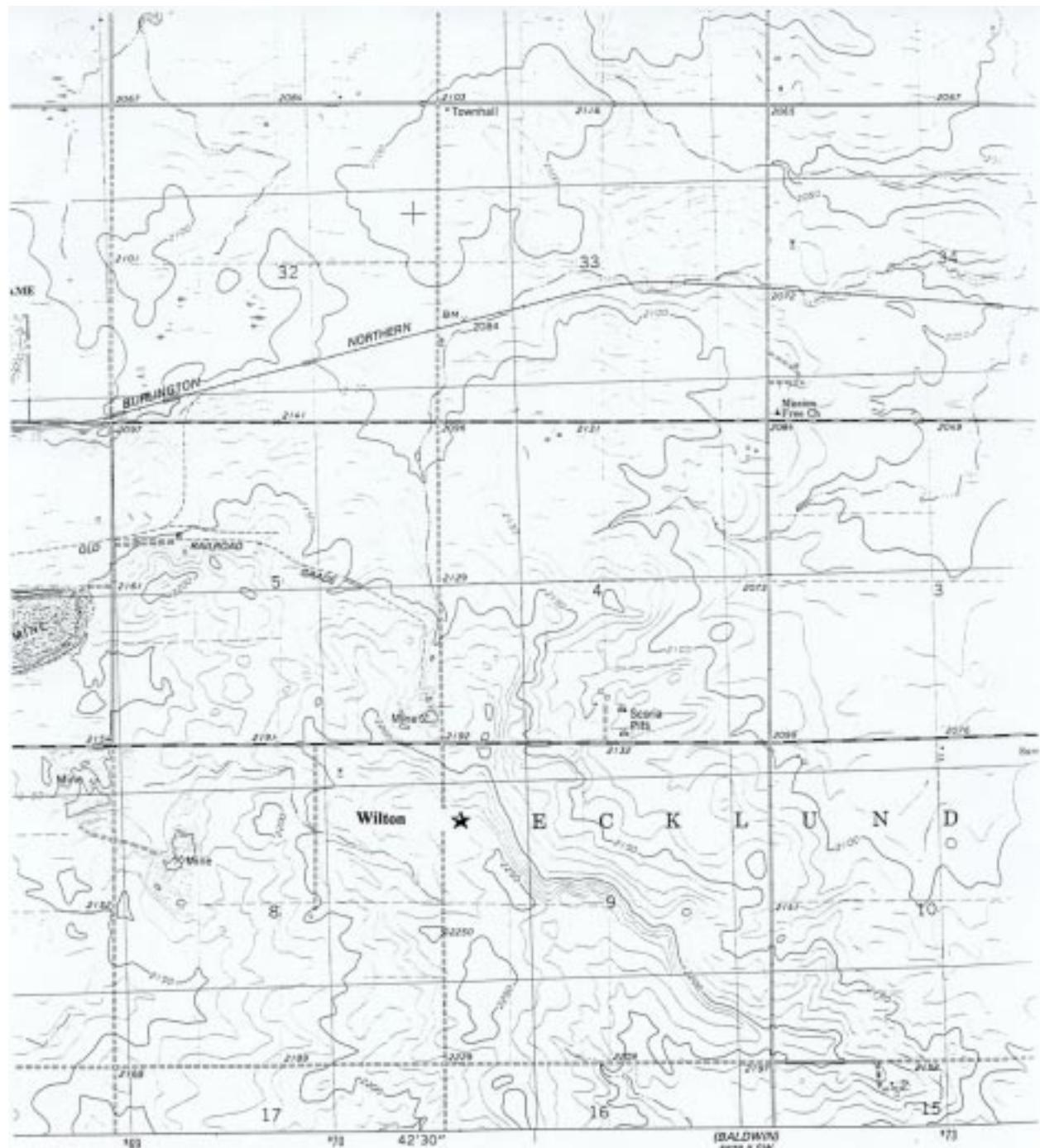
SITE INSTALLATION FORM

Site Name	Green River	
Tower Type	Tall Tower	
Geographic Location		
Latitude	47-04-05 D-M-S	
Longitude	102-55-38 D-M-S	
USGS Map Quad	New Hradec	
Section	Section 35 SE $\frac{1}{4}$, SE $\frac{1}{4}$	
Township	142 N	
Range	97 W	
Base Elevation	2684 ft	
Tower Height	271 ft	
Measurement Levels		
Level - Lowest	1	33 ft
Level	2	82 ft
Level	3	131 ft
Level	4	190 ft
Tower Type	Three Sided, "Rohn-Type"	
Equipment Serial Numbers	Levels	
Datalogger		0100290
Anemometer	1	1560
Anemometer	2	1561
Anemometer	3	1562
Anemometer	4	1564
Wind Direction	1	14
Wind Direction	2	
Wind Direction	3	15
Temperature Sensor	1	
Temperature Sensor	2	
Tower		



SITE INSTALLATION FORM

Site Name	Wilton	
Tower Type	Tall Tower	
Geographic Location		
Latitude	47-08-21 D-M-S	
Longitude	100-42-21 D-M-S	
USGS Map Quad	Grass Lake	
Section	Section 9 NW $\frac{1}{4}$, NW $\frac{1}{4}$	
Township	142 N	
Range	79 W	
Base Elevation	2240 ft	
Tower Height	250 ft	
Measurement Levels		
Level - Lowest	1	33 ft
Level	2	89 ft
Level	3	131 ft
Level	4	180 ft
Tower Type	Three Sided, "Rohn-Type"	
Equipment Serial Numbers	Levels	
Datalogger		0100292
Anemometer	1	1565
Anemometer	2	1593
Anemometer	3	1592
Anemometer	4	1591
Wind Direction	1	16
Wind Direction	2	
Wind Direction	3	17
Temperature Sensor	1	
Temperature Sensor	2	
Tower		



by the Geological Survey

1:250,000
aerial photographs
map edited 1979

North Dakota coordinate
conic
state grid, zone 14

fence and field lines where
evident

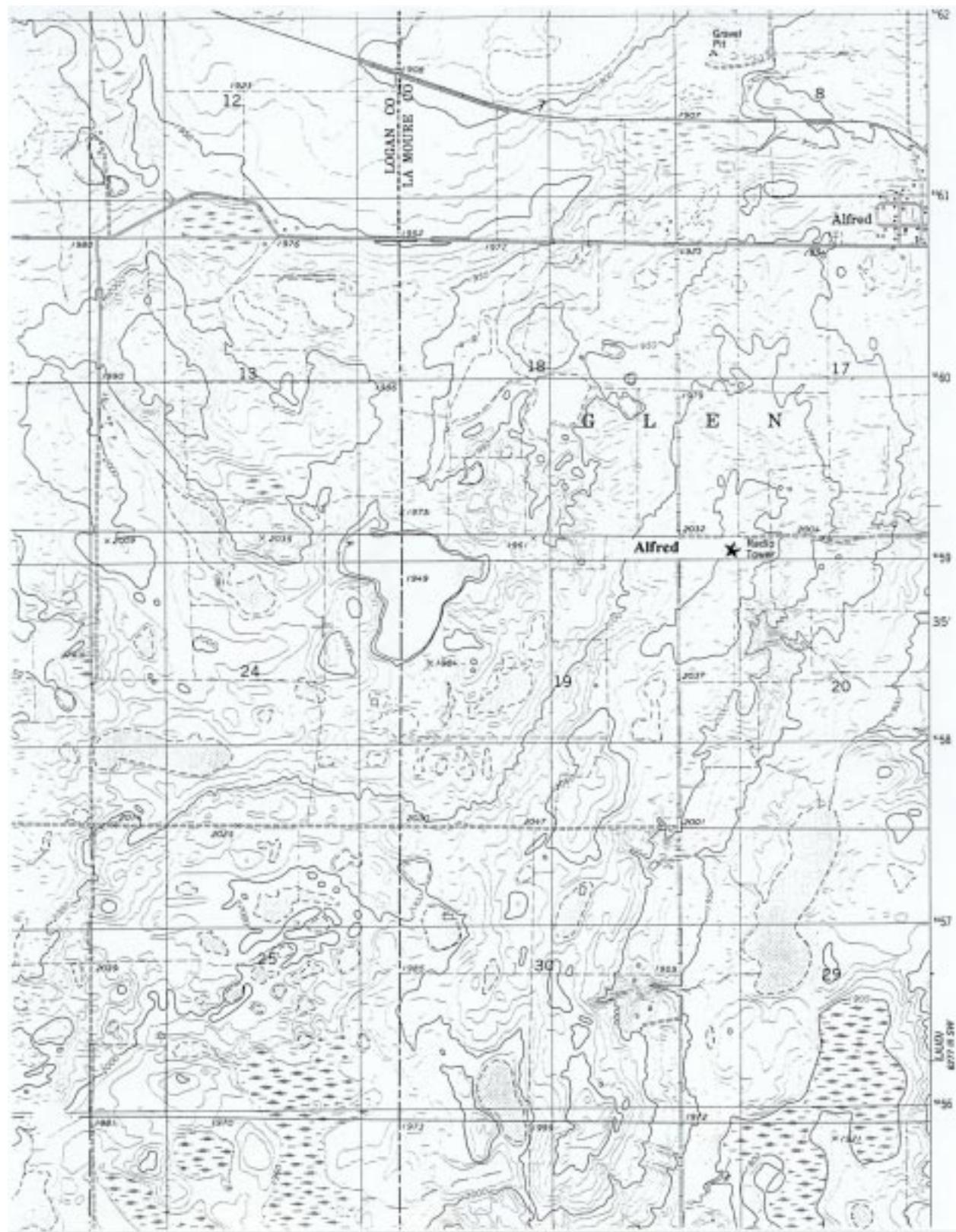


SCALE 1:24,000

CONTOUR INTERVAL 10 FEET
NATIONAL GEOGRAPHIC VERTICAL DATUM OF 1929

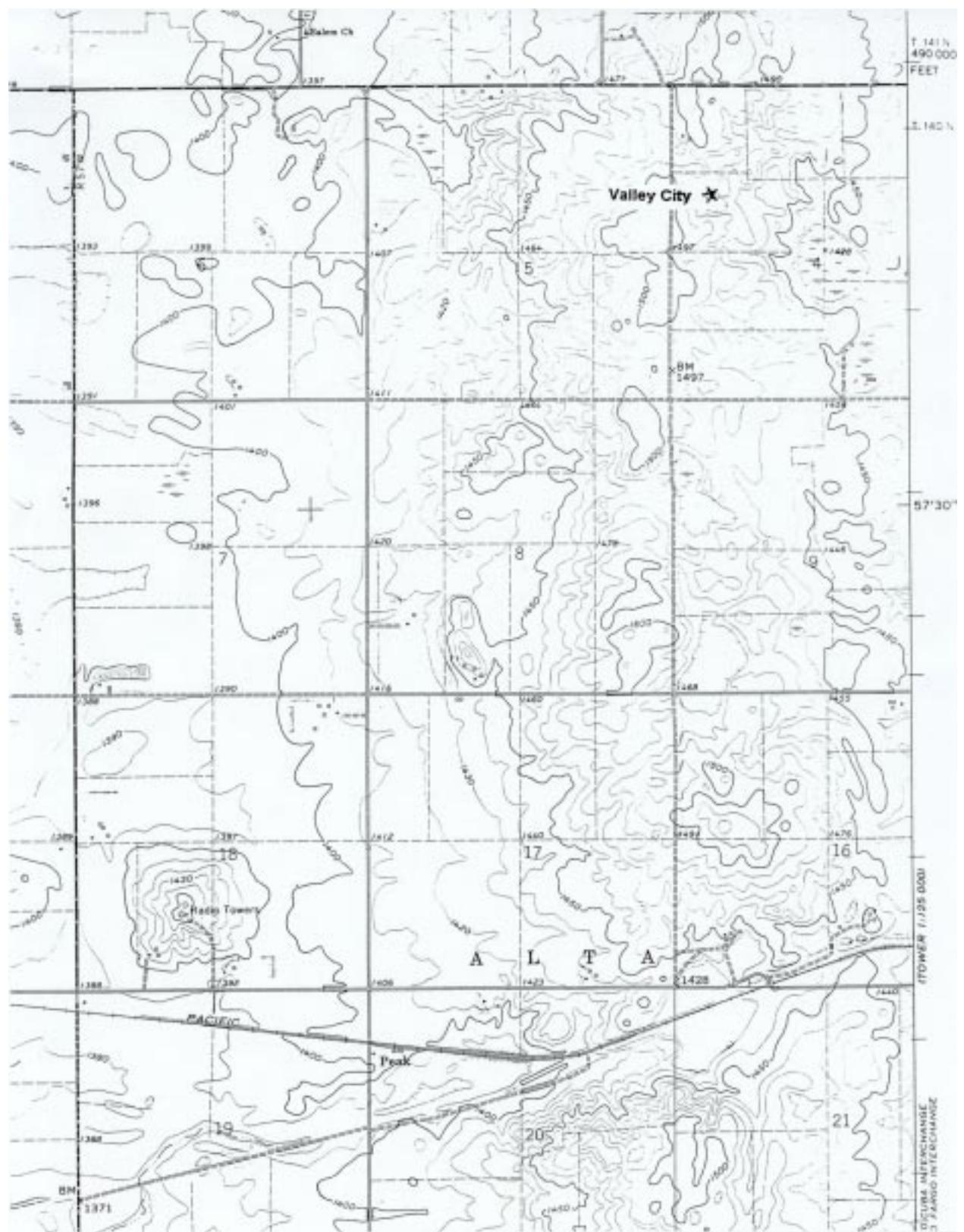
SITE INSTALLATION FORM

Site Name	Alfred	
Tower Type	Tall Tower	
Geographic Location		
Latitude	46-35-15 D-M-S	
Longitude	99-00-46 D-M-S	
USGS Map Quad	Alfred	
Section	Section 20 NW $\frac{1}{4}$, NW $\frac{1}{4}$	
Township	136 N	
Range	66 W	
Base Elevation	2070 ft	
Tower Height	160 ft	
Measurement Levels		
Level - Lowest	1	33 ft
Level	2	82 ft
Level	3	131 ft
Level	4	
Tower Type	Three Sided, "Rohn-Type"	
Equipment Serial Numbers	Levels	
Datalogger		0100293
Anemometer	1	1590
Anemometer	2	1589
Anemometer	3	1597
Anemometer	4	
Wind Direction	1	18
Wind Direction	2	
Wind Direction	3	19
Temperature Sensor	1	
Temperature Sensor	2	
Tower		



SITE INSTALLATION FORM

Site Name	Valley City	
Tower Type	Tall Tower	
Geographic Location		
Latitude	46-58-35 D-M-S	
Longitude	97-53-22 D-M-S	
USGS Map Quad	Valley City East	
Section	Section 4 NW $\frac{1}{4}$, NW $\frac{1}{4}$	
Township	150 N	
Range	57 W	
Base Elevation	1500 ft	
Tower Height	131 ft	
Measurement Levels		
Level - Lowest	1	33 ft
Level	2	82 ft
Level	3	131 ft
Level	4	
Tower Type	NRG: 140TTC-HD6	
Equipment Serial Numbers	Levels	
Datalogger		0100299
Anemometer	1	1598
Anemometer	2	1000
Anemometer	3	1003
Anemometer	4	
Wind Direction	1	20
Wind Direction	2	
Wind Direction	3	21
Temperature Sensor	1	
Temperature Sensor	2	
Tower		



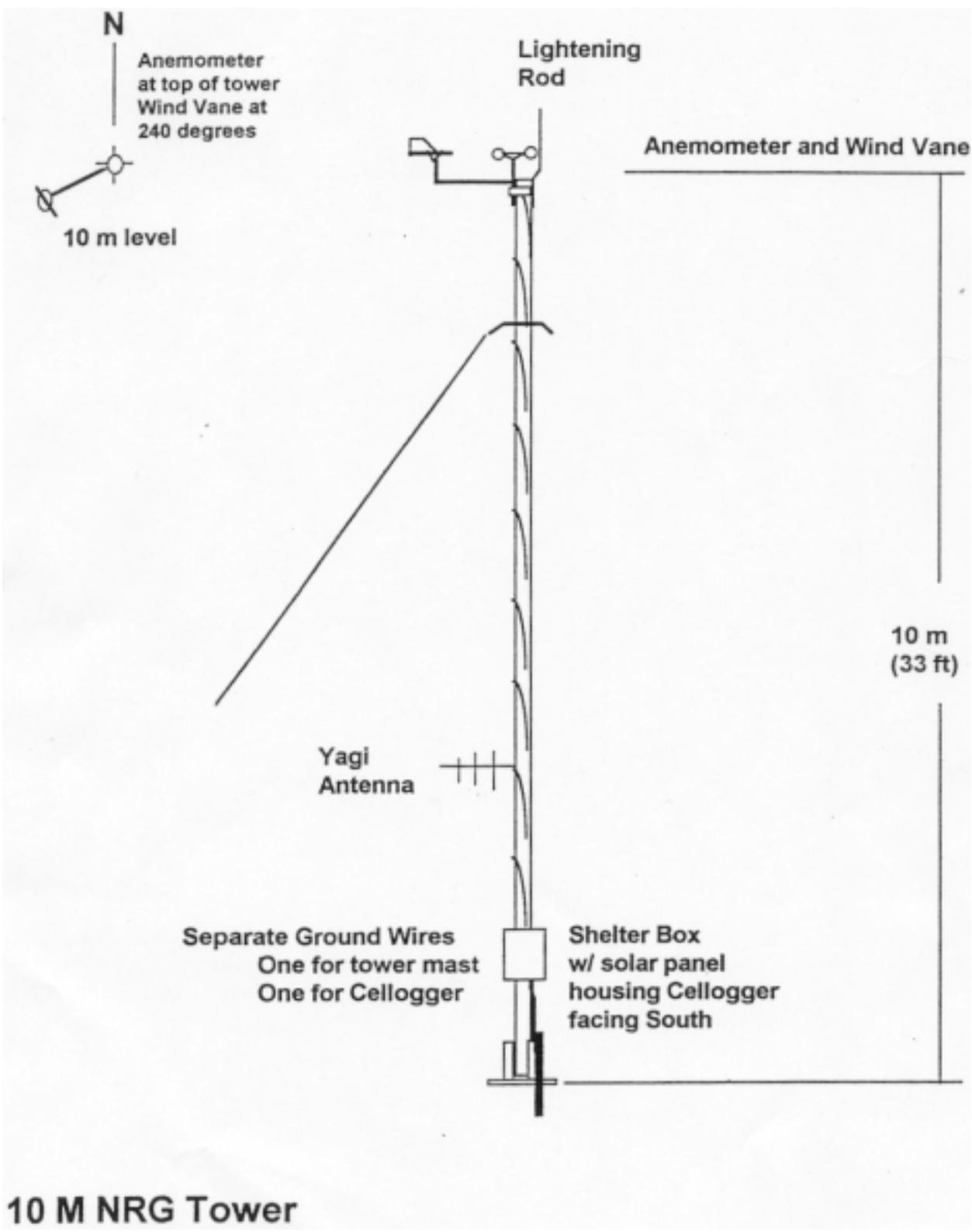
SITE INSTALLATION FORM

Site Name	Pickert	
Tower Type	Tall Tower	
Geographic Location		
Latitude	47-30-03 D-M-S	
Longitude	97-48-58 D-M-S	
USGS Map Quad	Finley	
Section	Section 32	
Township	147 N	
Range	56 W	
Base Elevation	1390 ft	
Tower Height	350 ft	
Measurement Levels		
Level - Lowest	1	33 ft
Level	2	82 ft
Level	3	131 ft
Level	4	180 ft
Tower Type	Communications Tower	
Equipment Serial Numbers	Levels	
Datalogger		
Anemometer	1	
Anemometer	2	
Anemometer	3	
Anemometer	4	
Wind Direction	1	
Wind Direction	2	
Wind Direction	3	
Temperature Sensor	1	
Temperature Sensor	2	
Tower		



STATE ENERGY OFFICE

NRG TOWER SCHEMATICS



10 M NRG Tower

